ANNIE Water Fill Procedure (Full Tank)

(Assuming filling on Wednesday 4/13/2016)

Tuesday : Prep Day (starting early afternoon)

- Fire Department and FESS will run all hoses (2.5" and 1.75") from hydrant to the Hall and establish hose connections to the skid
—> They will also lay a ramp to protect the hose from cars
—> A 15-20 minute flush of the hydrant system will be done

- The water skid and DI bottles will be located just outside of the Hall entrance
—> John is not worried about nighttime temps falling below freezing

- Vincent and Carrie should get a tutorial on the skid monitoring at some point on Tuesday afternoon

Wednesday : Fill Day (starting at 6 am!)

—> It is estimated that the fill should take ~8 hours to complete, assuming ~7000-7500 gallons and a fill rate of 15 gals/min.

1. Before filling the tank, make sure that the water system is flushed out again to remove any lingering contaminates. The Fire Dept. will come out about 6:10-15 to turn on the hydrant.

2. It will be important to continually monitor the water quality using the skid, this should be checked every minute (rotating in shifts) —> Watch for the dreaded red light of uncleanliness! If the light does come on, we will need to close the valve at the skid to stop water flow immediately(!!) and then ask John's group to close the valve at the 2.5"—> 1.75" connection. The second skid will then be set up for us. **It is expected that each skid will last about 3500 gallons before needing to be changed.**

2.5. We will want to keep a running log of various parameters during filling (gallons passed through, flow rate, time), taken every 15 minutes or so, and possibly take water samples at different points along the fill (once every 30 or 60 minutes). Note : These samples will come directly from the skid (before the water goes through the finishing filter).

3. As the tank fills, periodically check on the liner, especially near the water pump —> This will require moving the hatch slightly off to the side for the duration of the fill. We will use plexiglass to protect the inside of the tank while the hatch is open.

4. John V.'s group and Vincent will connect the water recirculation lines up to the tank, we will use the 1/4" line (goes down about 3-4" into the tank). Once the Davis water pump and PMTs are covered by a couple of feet of water, start the recirculation flow using the Davis skid on the second floor. Start monitoring the resistivity of the water.

5. At some point before the end of the fill, John V.'s group will connect the nitrogen lines up to the tank. (Needed for Step 9)

6. As we fill, we will want to check the health of the PMTs (did they survive up until this point?). To do this, we set the PMT's HV to 50-100 V and check their current (I) status. If a large number of them fail (say 15 PMTs or 25%), we will want to stop filling and address the situation.

7. Fill the tank to just over the Inner Structure's top horizontal platform (this should be about 1' from the top of the tank). We can stop the flow using the skid valve.

8. If a second day is needed, it will begin no earlier than 8 am (Fire Dept. changes shift at 7 am). We will stop the flow during working hours on Wednesday and then start up again Thursday morning.

9. Once the fill is complete, start the nitrogen surface flow and bubbling.

10. Clean up. Equipment returned to MI8.